LIST OF HEPATICÆ COLLECTED BY MR. THOMAS WHITELEGGE IN NEW SOUTH WALES, 1884-5.

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(Communicated by Thomas Whitelegge.)

(Plates XXII-XXXVII).

1. Frullania cinnamomea, n. sp.

Dioicous, fragrant, smooth, pale olive-green to cinnamon brown, irregularly branched, leaves closely imbricated, spreading at right angles with the stem, kidney-shaped, obtuse, entire, lobule large, galeate, pendulous, base tumid, apex acutely beaked, stylus minute, subulate ; underleaves approximate, nearly plane, broadly rotund or roundish, emarginate, sinus shallow, obtuse ; bracts ovate or cultrate, acute, upper margin entire, lower subdentate, lobule reflexed, evolute, broadly lanceolate, acuminate, dentato-ciliate, bracteole sub-oblong quadrate, or lingulate, bifid, segments acute, margin distantly dentate-laciniate ; perianth obovate, trigonous.

Dioicous, resembling *F. deplanata,* Mitt., fronds 2′ to 3′ in diameter, corticolor, growing in soft, depressed, imbricated tufts, odour fragrant, violaceous, smooth, pale olive-green to cinnamon brown, irregularly branched, fastigiate, convex when dry, 2· mm. wide. Stems slender, flexuose. Leaves closely imbricated, spreading at right angles with the stem which they cross, broadly cordate or kidney-shaped, obtuse, entire, texture thin sub-translucent, slightly polished, cells smallish roundish filled with numerous oil corpuscles, walls irregular, trigones large ; lobule large, galeate, pendulous, base tumid and cucullate, apex acutely beaked not spined, mouth

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Note.—Those marked with an asterisk, new to New South Wales.

revolute. Stylus minute, subulate. Underleaves approximate, nearly plane, broadly rotund or roundish, amplexicaul, emarginate, sinus obtuse, shallow (1-5th deep), segments sub-acute, margin entire (not reflexed), umbonate near the base (4 times broader than the stem).

Inflorescence dioicous. Involucre terminal or seated on short crowded branches near the apex of the stem. Bracts ovate or cultrate, acute, upper margin entire, lower sub-dentate, lobule reflexed, evolute, broadly lanceolate, acuminate, dentato-ciliate. Bracteole sub-oblong-quadrate or lingulate, bifid to 1-3rd, segments acute, margin distantly dentate-laciniate, sub-bracteole oblong-oval, bifid, distantly dentate. Perianth projecting, obovate, truncate, trigonous, the third angle postical, antical side convex, smooth with thin margins.

Androecia lateral forming long linear catkins, bracts much smaller, lyriform, cucullate, compressed, apex with one or two small teeth, antheridia oval, in pairs.

Measurements—Plants 1½ to 2 inches long, with leaves 2· mm. to 2·5 mm. broad, leaves 1·75 mm. long × 1·25 mm. broad, 1·75 mm. × 1· mm., 1·5 mm. × 1·25 mm.; cells ·02 mm. × ·03 mm., ·025 mm., ·02 mm.; lobule 1· mm. long × ·6 mm. broad, 1· mm. × ·5 mm.; stylus ·25 mm. long × ·075 mm. broad at the base; underleaves 1· mm. high × 1·25 mm. broad, 1· mm. × 1· mm., ·75 mm. × ·75 mm.; sinus ·2 mm. deep; bract 1·75 mm. long × 1· mm. broad; lobule of bract 1·25 mm. long × ·75 mm. broad at the base; bracteole 1·5 mm. long × ·75 mm. broad; segments ·5 mm. long; perianth 2·75 mm. long × 1·25 mm. broad; ♂ amenta 3· to 4· mm. long, ·75 mm. broad; perigonial leaves ·6 mm. long × ·5 mm. broad, ·5 mm. × ·4 mm.; antheridia ·175 mm. × ·15 mm.

Obs.—This species differs from *F. falciloba* in the more delicate texture, larger, broader lobules, rounder underleaves which are not reflexed at the margin, the more acute bract, with dentate, ciliate lobule, bracteole laciniate-ciliate, perianth more acutely angled, androecia long not sub-globose.

From *F. probosciphora* by its entire underleaves, exserted perianth which is quite smooth, not nearly immersed and rough at the edges.

From *F. deplanata*, Mitt., by the want of the new hay odour, by the perianth in that species being quite compressed not sharply carinate postically; in it also the bracts and their lobules are entire.

In *F. monocera* the margins of the perianths are spinulose.

Lastly in *F. spinifera* the bracts and lobes are more acute and entire, and the perianth narrow and bluntly trigonous.

DESCRIPTION OF PLATE XXII.

Fig. 1. Plant nat. size. 2. Portions of stem, antical view × 16. 3. Ditto, postical view × 16 4. Ditto, showing lobules and stylus clearly. 5-6. Leaves × 16. 7. Portion of leaf × 290. 8-9. Underleaves × 24. 10. Stylus × 85. 11. Bract × 24. 12. Bracteole × 24. 13. Perianth × 16. 14. Cross-section of perianth × 16. 15. Portion of stem with ♂ amenta × 16. 16-17. Perigonal leaves × 24. 18. Antheridia × 85.

2* FRULLANIA MONOCERA, Hook. fil. et Tayl.
♂ et ♀ cum per.
On trees, Ball's Head Bay, Sydney, Feb., 1885 (7 and 31).

3 FRULLANIA FALCILOBA, H. f. T.
Cambewarra, Oct., 1884 (Thorpe) (3 and 6).

4 FRULLANIA PROBOSCIPHORA, Tayl.
♀ cum per.
On trees near Homebush, Sydney, July, 1885 (18); ♂ Cambewarra, Oct., 1884 (Thorpe) (3).

5* FRULLANIA SQUARRULOSA, H. f. T.
On trees, La Perouse, Botany Bay, June, 1885 (30); ♂ Cambewarra, Oct., 1884 (Thorpe) (3).

6* FRULLANIA PENTAPLEURA, Tayl.
♂ et ♀ cum per.
Cambewarra, Oct., 1884 (Thorpe) (3).

7* FRULLANIA DIPLOTA, Tayl.

♂ et ♀ cum per.

Mermaid's Glen, Blue Mts., 3,000 ft., Sept., 1885 (9). On wet rocks, Blackheath, Blue Mts., Sept., 1885 (26).

8 LEJEUNEA (HARPA LEJEUNEA) MIMOSA, H. f. T.

♂ et ♀ cum per.

Gore Cove, Sydney, May, 1885 (54).

Lejeunea rufescens, Lindenb., Syn. Hep. p. 366, seems to be the same thing, but *L. mimosa* was first published in Lond. Journ. of Bot., 1844, p. 318, n. 65, whereas the 3rd part of the Synopsis pp. 305-464, appeared in 1845.

Of the specimen of *L. rufescens* from Terra Statuum (Hb. Hook.), a fragment remains in Wilson's Herb. named *J. lineata*, Sw. This and the plant from the Auckland Group have a reddish-brown tinge ; but Australian specimens are dull, sordid green. The group to which *L. mimosa* belongs is remarkable for the somewhat twisted, dimidiate, ovate leaves, and ovate, involute lobules ; the perianth pyriform, pentagonal on section, mouth constricted with a slight mucro.

Measurements.—Stem $\frac{1}{2}$ to 1 inch long, ·1 mm. diam. ; leaves ·4 mm. long × ·35 mm. broad ; lobule ·2 mm. long × ·1 mm. broad ; cells ·02 mm. ; underleaves ·15 mm. broad × ·15 mm. high ; seg. ·05 mm. long ; sub-bracteole ·3 mm. broad × ·3 mm. high ; seg. ·075 mm. long ; bracteole ·4 mm. broad × ·35 high ; seg. .075 mm. long ; lobule ·2 mm. long × ·1 mm. broad ; perianth 1· mm. long × ·6 mm. broad, ·75 mm. × ·4 mm. ; perigonial leaves ·3 mm. long × ·25 mm. broad ; lobule ·3 mm. long × ·175 mm. broad ; antheridia ·125 mm. × ·1 mm.

DESCRIPTION OF PLATE XXIII.

Fig. 1. Plants nat. size. 2. Portions of stem, postical view × 64. 3. Leaf, postical view × 64. 4. Leaves, antical view × 64. 5. Portion of leaf × 290. 6. Bract × 64. 7. Underleaf near bracteola (sub-bracteola ?) × 85. 8. Bracteola × 85. 9. ditto × 64. 10. Perianth × 31. 11-12. Cross-sections of perianth × 31. 13. Perigonial leaves × 64.

9* LEJEUNEA (EULEJEUNEA) FLAVA, (Sw.)

Closely appressed to rocks in a cave, Mossman's Bay, Aug., 1885 (58).

10 LEJEUNA (EULEJEUNEA) SUBELOBATA, n.sp.

Monoicous, small, dull green ; stem sparsely branched ; leaves roundish or roundish-ovate, lobule wanting or very minute, underleaves 1-5th to 1-6th smaller, broadly rotund, bifid to about 1-3rd ; bracts smaller oblong-obovate, lobule half the size oblong-cuneate or lingulate; bracteole spathulate, emarginate, sinus shallow; perianth sub-pyriform, 5-carinate.

Growing in shallow layers, or creeping amongst mosses, more slender than *L. serpyllifolia*, of a dull green colour. Stems sparsely and irregularly branched, showing upon a cross-section cells of about equal size, 5-6 diam., 8 cortical. Leaves inserted at an angle of 65° sub-imbricate, slightly concave ; roundish or roundish-ovate to oval, lobule wanting or very minute, 1-12th size of lobe tumid, cells medium size, with thick walls, no trigones. Underleaves 1-5th to 1-6th smaller, distant, broadly rotund, bifid to about 1-3rd. Bracts smaller oblong-obovate, lobule half the size, oblong-cuneate or lingulate ; bracteole spathulate, emarginate, sinus shallow 1-6th deep. Perianth sub-pyriform, 5-carinate angles not winged, rostellate. Androecia forming short spikelets or capitula below the ♀.

Measurements—Stems from $\frac{1}{4}$ to $\frac{1}{2}$ an inch long, ·1 mm. diam., with leaves ·75 mm. broad ; leaves ·45 mm. × ·35 mm., ·425 mm. × ·35 mm., 4 mm. × ·35 mm. ; lobule ·15 mm. long × ·075 mm. high ; cells ·03 mm. ; underleaves ·2 mm. high × ·2 mm. broad, seg. ·1 mm., ·175 mm. × ·15, seg. ·05 mm., ·15 mm. × ·15 mm., seg. ·05 ·15 mm. × ·125, seg. ·05 mm.; bracts ·3 mm. long × ·1 mm. broad ; lobule of bract ·25 mm. long × ·05 mm. broad ; bracteole ·3 mm. long × ·15 mm. broad; perianth ·55 mm. long × ·45 mm. broad, ·55 × ·4, ·45 × ·3.

Hab.—On wet rocks, George's River, Botany Bay, Janry., 1885 (47) ; George's River, Botany Bay, Janry., 1885 (42).

DESCRIPTION OF PLATE XXIV.

Fig. 1. Plants nat. size. 2. Cross-section of stem × 85. 3. Portion of branch, antical view × 64. 4. Portion of branch, postical view × 85. 5. Portion of leaf showing lobule × 85. 6. Portion of leaf × 290. 7. Underleaf from chief stem × 85. 8-9. Bracts × 64. 10. Bracteole × 64. 11. Perianth × 64. 12. Cross-section of perianth × 64.

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11 LEJEUNEA (MICROLEJEUNEA) GRACILLIMA, Mitt.

Growing on *Lejeunea flava*, Mossman's Bay, closely appressed to a rock in a cave, Aug., 1885, (58a). On trees, Ball's Head Bay, Sydney, Febry., 1885 (31b).

Measurements.—Stems 2· mm. long, with leaves ·3 mm. wide, ·025 mm. diam.; leaves ·2 mm. long × ·125 mm. broad, ·225 × ·125; lobule ·1 mm. high × ·07 mm. broad; foliole ·06 mm. high × ·05 mm. broad, segments ·03 mm.

DESCRIPTION OF PLATE XXV.

Fig. 1. Plants nat. size. 2-3. Portion of stems × 85, postical view. 4. Portion of stem × 85, antical view. 5. Portion of leaf × 290. 6. Foliole × 290.

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12 RADULA NOVÆ-HOLLANDIÆ, Hampe, Syn. Hep. p. 254.

Cambewarra, near Moss Vale (C. Harris), Sept., 1885 (63).

13 RADULA PHYSOLOBA, Mont., Syn. Hep. p. 254.

♂ et ♀ cum per.

Cambewarra, near Moss Vale (C. Harris), Sept., 1885 (63).

14 RADULA BUCCINIFERA, H. f. T. Lond. Journ. of Bot., 1844, p. 580.

Mermaid's Glen, Blackheath, Blue Mts., 3,000 ft., Sept., 1885.

15 PORELLA STANGERI (Lindenb. et G.)

♂ Cambewarra (C. Harris), Sept., 1885; ♂ On trees, Rookwood, near Sydney, Aug., 1885 (10); Mermaid's Glen, Blue Mts., Sept., 1885; var. *ramosa*, Northwood, Lane Cove River, Aug., 1885 (32).

16 ISOTACHIS GUNNIANA, Mitt., Fl. Tasm., p. 232.
On rocks, Mermaid's Glen, Blue Mts., Sept., 1885 (12).

17 ISOTACHIS GRANDIS, n. sp.

Laxly caespitose, large, rosy brown; stems simple, rarely branched; leaves distichous, closely imbricated, sub-complicate, rotundo-ovate, bifid to about 1-4th, sinus and segments subacute, often trifid, margin entire or with few teeth near the base, texture thin, cells elongate; underleaves smaller, elliptic-ovate, bidentate to 1-3rd, entire or sparsely dentate.

Growing in loose patches of a rosy brown colour. Stems long, flexuose, brown, simple, rarely branched. Leaves distichous, closely imbricated, patent, amplexicaul, sub-complicate, ventricose at the base, rotundo-ovate, bifid to about 1-4th, sinus and segments sub-acute, postical segment often again shallowly bifid, margin entire or armed with one or two teeth near the lower half; texture thin but firm, slightly polished, cells rather large, rhomboidal, 2-3 times longer than broad; walls firm, without trigones. Underleaves smaller than the leaves, plane or more or less convex, elliptic-ovate, bidentate to 1-3rd, sinus obtuse or acute, segments acute, margin entire or armed with a few irregular teeth.

Measurements.—Stems from 3 to 4 inches, 3· mm. wide; leaves ·3 mm. diam., leaves 1·75 mm. long × 1·5 mm. broad; segments ·5 mm.; cells ·07 mm. × ·025 mm.; underleaves 1·5 mm. long × 1· mm broad; seg. ·5 mm., rarely 1·75 mm. long × 1· mm. broad; seg. ·35 mm.

Hab.—On wet rocks, Lawson, Blue Mountains, June, 1884.

Obs.—This large and beautiful species has only been found sterile, yet it is so different from any of the described species that we do not hesitate to consider it a new species.

Isotachis sub-trifidus (H. f. et T.) has longer, narrower leaves, with the apices equally trifid.

The generic characters of *Isotachis*, as given in the "New Zealand Flora," are very meagre and imperfect.

We feel pleasure therefore in publishing an exhaustive review of the question by *Dr. Gottsche* contained in a letter to *Dr. Carrington*, dated Altona, 29 Dec. 1862, Jan. 1863.

" ISOTACHIS, Mitten.

"Charact. gen. 'Perianthium terminale, tubulosum, ore contracto dentato. Caulis erectus innovationibus ramosus. Folia incuba, amphigastriaque fere conformia, conduplicata, saepe serrulata.' Flor. Nov. Zeeland, p. 149.

" The above appear to be all that may be safely affirmed of this genus. It is readily recognised by its evenly arranged leaves and stipules, which last so nearly resemble the leaves in size and form, that the foliage might almost be called trifarious. The perfect capsule has been seen only in two species, in one of which it is spirally twisted and in the other perfectly even and straight. This genus is distinguished from *Jungermannia* by its incubous leaves, and from *Sendtnera*, which it closely resembles in habit, by the form of its perianth and free calyptra.

" ISOTACHIS LYALLII.

"It is closely allied to *I. madida* and to *I. Gunniana* in the structure of the perianth, which unlike any other *Jungermannia*, is composed of several layers of cells; this thickening of its wall is not owing to the adhering of the calyptra within, *nor to leaves on the external surface.* The inner involucral leaves in all these species are very minute and liable to be overlooked.

" ISOTACHIS GUNNIANA.

" The perianth like that of *I. Lyallii* and *madida* is remarkably thick and fleshy, in the last-named species it is composed of five strata of cells; the roughness on its exterior surface appears to be caused by *the partial breaking up of the external wall of cells,* and resembles that of the calyptra of *Sarcomitria.*" Mitt. op. cit.

" Mitten names : *I. subtrifida, madida, Lyallii, Gunniana, intortifolia, indica, serrulata,* and *armata,* 'Isotachis.'

"ISOTACHIS SERRULATA.

"You find at the base of the adult perianth commonly only one *foliolum involucrale* entering, but if you examine the top of the calyx (*apex dealbatus* Synop. Hep. p. 127 diagnosis), you find it overlaid with such small *foliola involucralia*, which now have lost their rose hue, and have overgrown the very top of the perianth. The diagnosis should be altered to: "*ore contracto denticulato squamulis involucralibus dentatis dealbatis externe accretis obvelato*." The perianth consists of 3-5 strata of red cells; in the bud, when the calyx has little overgrown the pistilla these *squamæ involucrales intimæ* are rose-coloured. Things will appear quite clear in the adult perianth, when dissected and seen from inwards.

"ISOTACHIS LINDIGIANA, G., n. sp.

"The top of the calyx on its outside with many small scales grown upon it, which are only fastened at their base. Sectio transveralis perianthii shows 3-7 strata, commonly 4-5, towards the base 6-7 strata; the outer layer of cells is rose-coloured the other hyaline; you find small scales of a few cells (6-7) in hairy shape like excrescences on *the outer wall* and on the *inner* wall of the perianth. *Isotachis madida* has hyaline scales just as *I. serrulata*, on the top of the calyx, which veil the folded apex perianthii.

"ISOTACHIS HAEMATODES, G.

"Perianth has 7 strata, *os perianthii externe squamulis dentatis accretis obvelatum; interne e pagina calycis lacinulæ ciliato-dentatæ hic inde oriuntur. Is. armata* has also the top of the perianth veiled by hyaline squamulæ. In these plants then the *torus pistillorum* is surrounded by a quantity of small scales, and if the calyx begins to grow up between the torus pistillorum and the squamulae involucrales, it takes some of them upwards upon its outer coat, which are to be found dispersed in different height, commonly 1-3 at the base, and a part on the top, over-growing more or less the real apex perianthii or obvelating it, sometimes the outer rose scales differently shaped, alternate with the subjacent whitish teeth or folds of the real perianth. Mr. Mitten has no idea of this interesting character, but as the scales are to be found in *Isotachis Lyallii* and *Gunniana*, I think, things will be there as they are in *Is. serrulata*, and you will understand what the "roughness on its exterior surface" means; in *I. Lyallii* it is called "per. minute tuberculatum." The perianth of *I. Gunniana* is "cylindricum, crassum, rugosum, *apice albidum, diaphanum, minute plicatum*;" perhaps after this it answers completely the perianth of *Jung. serrulata*, and if this is true of other species a more interesting character can be safely affirmed of this genus than Mitten suspects; I have named you five plants, which show this character in the most distinct manner; *Is. multiceps* does it less, but I found them too. This will be a little addition for your paper on New Zealand Hepaticæ."

DESCRIPTION OF PLATE XXVI.

Fig. 1. Plant nat. size. 2. Portions of stem × 16. 3-7. Leaves × 16. 8. Portion of leaf × 290. 9-12. Underleaves × 16.

18 LEPIDOZIA QUADRIFIDA, Lindenb., Syn. Hep., p. 203.
On logs, North Willoughby, Janry., 1885 (41).

19 LEPIDOZIA GOTTSCHEANA, Lindenb., Syn. Hep., p. 206.
On wet rocks, Mossman's Bay, Decr., 1884 (2).

20 LEPIDOZIA LAEVIFOLIA, H. f. T. Lond. Journ. of Bot., 1844, p. 384.
♀ On logs in a creek near Hurstville, Oct., 1885 (61).

21* LEPIDOZIA ALBULA, H. f. T. Lond. Journ. of Bot., 1844, p. 387; *L. ulotrix*, Syn. Hep.
♂ et ♀ cum per.
On fallen trees, Mermaid's Glen. Blue Mts., Sept., 1885 (33).

22* LEPIDOZIA CENTIPES, Tayl. Syn. Hep., p. 201.
Under shady rock ledges, Mossman's Bay, Decr., 1884 (5); On wet clay in caverns and shady places, Gore Cove, Sydney, July, 1885 (50); Blue Mts., Sept., 1885 (12).

23* LEPIDOZIA CAPILLARIS (Sw.) Prodr. Fl. Ind. occ., Lindenb., Syn. Hep., p. 212.
North Willoughby, July, 1885 (57).

24 LEPIDOZIA GRACILLIMA, n. sp.

Dioicous (?), caespitose forming entangled ascending tufts, flagelliferous, slender, pale green. Fronds pinnate, linear, gracile, filiform, somewhat rigid, branches approximate divergent, alternate, short, postical or lateral. Leaves distant, erecto-patent ; quadrate, quadrifid ; cells smallish to median size. Androecia on short lateral or postical branches.

Plants forming soft pale green tufts, stramineous beneath, flagelliferous, graceful ; fronds pinnate, pinnæ short, divergent, of nearly equal length, so that the outline is linear. Stem about the thickness of horse-hair (on cross-section 7 and 8 cells in diam., cortical cells 12 much larger), flagella capillary at the base leafy, branches short, alternate, lateral or postical ; rootlets confined to the under stem. Leaves distant except on branches where they are more approximate, not much broader than the stem, obliquely patent, cuneate, sub-quadrate, palmate, quadrifid to about a third sometimes half the length, segments incurved, slightly divergent patent, usually 4 cells long, 2 or 3 diam. at the base. Underleaves about as broad as the stem, quadrate, quadrifid to about a third, segments equal ; cells sub-quadrate, translucent, smallish to medium, sized, with thin walls, no trigones. Inflorescence dioicous. Involucra wanting. ♂ Amentula on short lateral or postical branches consisting of 6 to 15 pairs of perigonial leaves, imbricated, ventricose, ovate, bifid, antheridia oval.

Measurements.—Stems 1 to 2 inches long, with branches 5· mm. wide, ·175 mm. to ·2 mm. diam. ; leaves ·3 mm. long × ·3 mm. broad, seg. ·1 mm., ·25 × ·275, seg. ·1, ·25 × ·25, seg. ·1 ; cells ·03 mm. (·05 × ·02, ·04 × ·02, ·03 × ·02, ·025 × ·025); underleaves ·175 mm. high × ·2 mm. broad, seg. ·075 mm., ·15 mm. × ·175, seg. ·075, ·15 × ·175, seg. ·075; perigonial leaf ·2 mm. long × ·15 mm. broad; perigonial underleaf ·15 mm. long × ·075 mm. broad; antheridia ·075 mm. × ·05 mm.

Hab.—On wet rocks, Botany Bay, June, 1885, ♂.

Obs.—This pretty little species appears distinct from any described form. In the distant leaves and their shape it bears a superficial resemblance to *Lepidozia procera*, Mitt., which however is a much more robust species and in which the branches are secund and all seem to be capillary at the apex, with cells of stem 20 across, whilst this has only 7 or 8.

The leaves also are more erect and 4 to 5 times larger than the underleaves.

(In some respects our species resembles *L. capilligera*, Ldbg., but that is not half the size, with irregular ramification and patent filiform branches, loosely imbricated leaves semi-vertical and like the stipules, obovate-subquadrate, divided half-way into four divaricate subulate segments—Lehm. Pug., pl. IV., pp. 40-41. A considerable amount of confusion has grown about *L. capilligera;* it appears to be identical with the specimens named by Taylor *L. quadrifida*, which were collected at Auckland Island, and St. Patrick's Bay, Tasmania, by Dr. J. D. Hooker, 1847, and will be found under that name at Kew. The error has been worse confounded by Mitten, in Fl. Nov. Zeland. et Tasm., describing the large form of *L. capillaris*, which I have named *L. verticillata*, as *L. capilligera*, L. et L.) B. C.

DESCRIPTION OF PLATE XXVII.

Fig. 1. Plants nat. size. 2. Portion of stem showing ♂ catkin × 31. 3-4. Leaves × 85. 5. Portion of leaf × 290. 6. Underleaf with portion of stem × 85. 7-9. Underleaves × 85. 10. Perigonial leaf × 85. 11. Perigonial underleaf × 85. 12. Antheridium × 85.

25 LEPIDOZIA (TELARANEA Spr.) LONGISCYPHA, (Tayl.), Lond. Journ. of Bot., 1846, p. 280.

♂ et ♀ cum per.

Waterloo Swamps, in boggy places, May, 1885 (40) ♂ et ♀ cum per. In bogs, Coogee Bay, May, 1885 (38, 39).

Quite distinct from *Lepidozia setacea.*

26 BAZZANIA NOVÆ-HOLLANDIÆ, (N.) Syn. Hep., p. 221.

On rocks, Northwood, Lane Cove River, Aug., 1885, (27). On rocks, Fitzroy Falls, Moss Vale, Nov., 1884 (1.)

27 BAZZANIA ANISOSTOMA, (L. et L.) in Lehm. Pug., pl. VI. p. 58.

Lane Cove River, Aug., 1885 (14). Ball's Head Bay, Oct., 1885 (41).

28 LEMBIDIUM DENDROIDES, n. sp.

Fronds ascending from a creeping filiform pale rhizome, sometimes tuberous at the base, dendroid, apex circinate; stems thicker, irregularly bipinnate, branches lateral postical, confined to the upper half, sub-fasciculate, either simple or bearing one or more ramuli, leaves contiguous vertically patent, divergent, amplexicaul, convex-conduplicate, subcordate, 4 rarely 5 spinose-dentate, apical teeth larger, connivent, with a shallow obtuse sinus, second tooth about half way down each margin—apex cucullate. Underleaves pyramidal apex truncate and bearing 3-5 closely set ciliate teeth, the inner ones longest, basal margin spurred, fertile branches short postical, involucral bracts 2-3 rows ovate acute, 3-4 subulate-dentate at the apex. Perianth 0 (?), pistillidia numerous.

Dioicous (?). Plants growing in loose tufts of a dull green colour. From a creeping rhizome the stems ascend, pinnate or sub-bipinnate, bare near the base, fleshy, flagelliferous, flagella deflexed. Stolons long, white, often filipendula at the extremity, the tubers fusiform and of a brown colour; outer layer of large distinct cells, inner hyaline, on a cross section cells of stem large 8 × 10, 15 cortical larger, delicate thin walls. Branches curled, distant, lateral or postical, deflexed at the apex. Leaves transversely inserted in two rows, alternate or sub-opposite, imbricate convex-conduplicate, sub cordate, 4 rarely 5 spinose-dentate, when flattened out roundish-quadrate and notched near base; cells rather large, oblong-quadrate, no trigones. Underleaves as broad or slightly broader than the stem, on the branches 2-3rds as broad, contiguous pyramidal or sub-conoid from a broad base, divided for 1-3rd of the length into 3-5 narrow teeth which are closely appressed to each other. Involucre on short postical branches. Involucral bracts 3 pairs, the innermost smallest, outer pair ovate to ovate-acuminate more or less dentate at the apex, pistillidia linear, long, about 15. Perianth 0 (?). Male (?).

Measurements.—Stems about $\frac{1}{2}$ inch to $\frac{3}{4}$ inch long, ·2 mm. diam. with leaves ·55 mm. wide; leaves flattened out ·8 mm. long × ·55 mm. broad; cells, $\frac{1}{20}$ mm., ·06 mm. × ·04 mm.; underleaves ·35 mm. high × ·33 mm. broad; segments ·125 to ·15 mm.; outer bracts ·5 mm. high × ·4 mm. broad, and ·7 mm. × ·5 mm.; middle bracts 1·1 mm. high × ·6 mm. broad; inner bracts ·8 mm. high × ·5 mm. broad; pistillidia ·2 mm. long × ·05 mm. broad.

Hab.—On wet earth, Mermaid's Glen, Blackheath, Blue Mountains, 3,000 feet. September 5, 1885.—T. Whitelegge.

Obs.—*L. dendroides* is readily distinguished from *L. nutans* (H. f. T.) Mitt., by its more creeping habit and pinnate ramification. Only undeveloped pistillidia have been met with in either species.

Mr. Mitten describes the perianth of his *Lembidium ventrosum* as "superne valde incrassato," and in his notes on *Lembidium* in Hooker's Handbook Fl. New Zealand, as trigonous, but no further description is given.

(L. dendroides in the dendroid habit, rigid leaves, and conoid stipules, is nearly allied with the curious *Lepidozia tenax* H. f. and Tayl., which I suspect is a true *Lembidium,* as well as *L. nutans)* B. C.

DESCRIPTION OF PLATE XXVIII.

Fig. 1. Plants nat. size. 2. Portion of stem antical view enlarged. 3. Portion of stem postical view × 31. 4. Leaf flattened out × 31. 5. Portion of leaf × 290. 6-7. Underleaves × 85. 8. Underleaves × by 31. 9. Outer bracts × 31. 10. Middle pair of bracts × 31. 11. Inner bracts × 31. 12. Involucre × 24. 13. Pistillidium × 85.

29 CEPHALOZIA (ZOOPSIS) SETULOSA (Leitg.) S. Leitg. Mittheil. des Naturw. Ver. für Steiermark, (1876).

Mossman's Bay, June, 1885, and ♀ wet rocks, Gore Cove, July, 1885 (60). On wet rocks, Northwood, Lane Cove River, Aug., 1885. On wet rock ledges, Longville Creek, Sept., 1885.

30 CEPHALOZIA (ZOOPSIS) LEITGEBIANA, C. et P., Proc. Royal Soc. Tasm., 1887.

Clay banks, Ball's Head Bay, June, 1885, (44, 48), Oct., 1885 (62).

31 BLEPHAROSTOMA PALMATUM, Lindb. Lond. Journ. of Bot., July, 1887.

Cambewarra, near Moss Vale (C. Harris), Sept., 1885, (63).

32 LOPHOCOLEA HETEROPHYLLOIDEA, N., Syn. Hep., p. 157. ♂ et ♀ cum per.

Mossman's Bay, June, 1885 (45).

33 CHILOSCYPHUS FISSISTIPUS, H. f. T. var. LONGIFOLIUS.

(CHILOSCYPHUS LONGIFOLIUS, C. et P., MS.)

An undoubtedly striking form of this variable species, the linear oblong leaves separate it from the type; in the male stems the leaves are shorter and have a few teeth on the superior margin agreeing with original specimens from Taylor.

The *Chiloscyphus fissistipus* figured by Prof. Manolongo "Ep. Terra d. Fuego" t. 18, f. 16 is quite different from the original, and from Taylor's description, the underleaves being simply dentate not "laciniis ciliato-dentatis."

Measurements.—Stems about an inch long, with leaves 5· mm. wide; stem ·3 to ·4 mm. diam.; leaves 2·5 mm. long × 1·25 mm. broad; cells ·04 mm.; underleaves 1·25 mm. high × 1·75 mm. broad; bracts 1·75 mm. long × ·75 mm. broad; bracteole 1·25 mm. long × ·75 mm. broad; perianth 3· mm. long × 1.25 mm. broad; perigonial leaf ·75 mm. long × ·4 mm. broad; lobule ·5 mm. high × ·3 mm. broad; perigonial underleaf ·3 mm. long × ·15 mm. broad.

Hab.—Mossman's Bay, Sydney, June, 1885 (52).

DESCRIPTION OF PLATE XXIX.

Fig. 1. Plant nat. size. 2. Portion of stem × 11. 3. Leaf × 24. 4. Portion of leaf × 290. 5-6. Underleaves × 24. 7. Bracts and bracteole × 24. 8. Perianth × 16. 9. Cross section of perianth × 16. 10. Mouth of perianth, opened out × 16. 11. Perigonial leaf and underleaf × 31 ; antheridium × 85.

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34 CHILOSCYPHUS FISSISTIPUS, H. f. T. var. TENERRIMUS.

(CHILOSCYPHUS TENERRIMUS, C. et P., MS.)

This is a delicate, fragile form with pale green, translucent leaves, underleaves smaller, not so deeply or irregularly laciniate as in the type.

Measurements.—Stems 1 to 2 inches long, with leaves 3· to 4. mm. broad ; diam. of stem ·2 mm. ; leaves 1·65 mm. long × 1·1 mm. broad ; cells ·055 mm. ; underleaves ·9 mm. high × 1·25 mm. broad ; segments ·5 mm.

Hab.—On rocks, Mermaid's Glen, Blue Mts., Sept , 1885 (29).

DESCRIPTION OF PLATE XXX.

Fig. 1. Plants nat. size. 2. Portion of stem × 16, antical view. 3. Portion of stem × 16, postical view. 4. Portion of leaf × 290. 5-8. Underleaves × 24.

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35 CHILOSCYPHUS LIMOSUS var. LAEVIGATUS, Proc. Roy. Soc. Tasm. 1887, C. et P.

Measurements.—Stems about 1 inch long, with leaves 3· mm. broad, ·2 mm. diam. ; leaves 1·75 mm. long × 1· mm. broad at the base ; cells ·04 mm. (·05 × ·05, ·05 × ·03, ·04 × ·03, ·03 × ·02) ; underleaves ·75 mm. high × ·5 mm. broad, seg. ·3 mm. deep.

Hab.—On wet rocks, Northwood, Lane Cove River, Aug., 1885 (15).

Obs.—Only barren stems have been met with ; they differ from the type in having leaves polished; probably other characters may be discovered in the fertile plant.

DESCRIPTION OF PLATE XXXI.

Fig. 1. Plants nat. size. 2. Stem, antical view × 16. 3. Stem, postical view × 16. 4. Portion of leaf × 290. 5-9. Underleaves × 31.

36 CHILOSCYPHUS ENDLICHERIANUS, N., Syn. Hep., p. 184.
Cambewarra near Moss Vale (C. Harris), Sept., 1885 (63).

37 JUNGERMANNIA WHITELEGGEI, n.sp.

Dioicous (?). Fronds forming shallow erecto-decumbent tufts of an intense but dull green colour. Stems simple, or in older plants 2-3 times furcate annotinous, widest near the apex, giving off branches on each side below the involucral whorls, branches divaricate, leaves succubous or transverse, accrescent, erecto-patent amplexicaul, complicate, broadly quadrate, divided nearly half-way down into two obtuse nearly equal 2- to 3-lobed repand segments, margins crisped, reflexed at each sinus, fringed with slender unicellular cilia, often hamate at the apex; underleaves similar; ♀ inv. bracts 4-5 laciniate-ciliate connate with the bifid bracteole patent from an erect sheathing base, perianth terminal, half-immersed elliptic-ovate, deeply 5-6-plicate, apex minutely dentate.

Dioicous. Growing in large shallow tufts. Fronds suberect, moderate size, of an intense but dull green colour. Stems simple, or in older plants with 2 or 3 stems arising from below the involucre, fragile, cells of stem about 40 in circumference, 12 × 15 hyaline, walls thin, outer row of cells with slightly thicker walls, leaves succubous, obliquely inserted, some almost transverse, accrescent, capitate, amplexicaul, complicate or spreading, quadrate, lobate at the base, divided to about the middle into 2 obtuse nearly equal 2-3-lobed repand segments, margins crisped, reflexed at each sinus, fringed with slender unicellular acicular cilia, often hamate at the apex; cells of a moderate size, 4-5 and 6-sided, no trigones. Underleaves large, similar to the leaves in almost every respect. Bracts sub-reniform in outline, 4-5 lobate to below the middle, lobes ovato-acute, ciliate, connate with the sub-quadrate bracteole, which is bifid to below the middle, lobes ovate-acute, lobate at the base. Perianth terminal, half-immersed, elliptic-ovate, deeply 5-6 plicate, unistrata, mouth slightly contracted, slightly dentate. Pistillidia numerous (25). Male plant not seen.

Measurements.—Stems about 1 inch long, ·4 mm. diam., with leaves ·3 to ·4 mm. wide; leaves 2·25 mm. high × ·2 mm, broad; seg. 1·4 mm., 2·25 mm. × 2·25 mm.; seg. 1·5 mm.; cells ·025 mm., ·03 mm., ·04 mm. ($\frac{1}{30}$ mm.); underleaves 1·5 mm. high × 1·75 broad; bract 1·5 mm. high, 2·25 mm. broad, seg. ·75 mm. long; cilia ·15 to ·3 mm. long; underleaf from branch ·1 mm. high × 1·6 mm. broad, seg. ·6; perianth 1·6 mm. long × 1·1 mm. broad; pistillidia ·15 mm. long × ·5 mm. broad.

Obs.—This very beautiful species has a peculiarity rarely observed in any other hepatic. The cilia, which are most numerous (200 were counted on an underleaf), are all unicellular, as in the ciliate *Ricciæ.* It bears a close resemblance to *Ptilidium ciliare*, and Dr. Spruce expresses the opinion that it is a true *Ptilidium*; but the insertion of the leaves, which is undoubtedly succubous, postical ramification, the unicellular cilia, the terminal inflorescence, and the deeply-plicate perianths half-immersed in the involucral bracts, afford important distinctive characters. This species, which, so far as we know, cannot be confounded with any other, we name in honour of its discoverer, and are proud that we have the opportunity of doing so. Mr. Whitelegge is a Lancashire man, and is doing valuable work in this and in other branches of natural history.

DESCRIPTION OF PLATE XXXII.

Fig. 1. Plant nat. size. 2, 3. Leaves × 16. 4. Leaf × 24 5. Portion of leaf × 290. 6. Underleaf × 16. 7. Underleaf near apex of stem × 24. 8. Underleaf from branch × 16. 9. Bract × 24. 10-11. Cilia × 85. 12. Perianth × 24. 13. Cross-section of perianth × 24. 14. Pistillidia × 85.

38* JUNGERMANNIA TASMANICA, Tayl., var.
Mossman's Bay, Sydney, Dec., 1884, June, 1885.

39* LEIOSCYPHUS CHILOSCYPHOIDES (Lindenb.) Mitt., Lehm. Pug. VIII., p. 4.
♂ Cambewarra (C. Harris), Sept. 1885, (47), (63); Mermaid's Glen, Blue Mts., Sept., 1885 (17).

40* CALYPOGEIA UNGUICULATA (H f. T.) S.
On wet rock ledges, North Willoughby, July, 1885 (57). In bogs, Marubra Bay, near Coogee Bay, May, 1885 (39).

41* BALANTIOPSIS DIPLOPHYLLA (H. f. T.) Mitt.; *Jung. diplophylla*, Lond. Journ. of Bot. (1844), p. 377.
Gore Cove, Sydney, July, 1885 (49); Ball's Head Bay, Aug., 1885 (56).

42 SYMPHYOGYNA INTERRUPTA, n. sp.

Dioicous; fronds linear, procumbent, olive-green, margin entire, repand-undulate, interrupted below, mid-rib strong, fleshy, with a narrow central ligneous band, brownish, projecting, and flexuose, on the under surface clothed with long flaxen rootlets; lamina transverse, or more or less connivent; innovations either continuous with the central axis or postical; fertile bracts oblong or obcuneate, distant, about as broad as the nerve, 5-6 ciliate-dentate; two or three cilia are also found attached above the base of the bracts; pistillidia about 12; calyptra long, clavate, bearing at the apex the abortive pistillidia, capsule oblong, dividing into 2 or 4 valves attached at the apex; elaters numerous, reddish-brown, filiform, bispiral; spores roundish, minute, smooth.

Growing in straggling patches of an olive-green color. Fronds rather large, linear, procumbent, margin entire, repand, undulate, much and irregularly interrupted below, midrib strong, fleshy, with a narrow central ligneous band, brownish, projecting and flexuose, on the under surface clothed with long flaxen rootlets; lamina transverse, or more or less connivent, innovations either continuous with the central axis or postical.

Fertile bracts oblong or obcuneate, distant, about as broad as the nerve, texture as in the upper stratum of cells being a continuation of the same, 5-6 ciliate-dentate, 2 or 3 scale-like cilia are found attached above the base of the bract.

Pistillidia about 12. Calyptra arising from the nerve and apparently of the same structure, long, clavate, mouth bluntly laciniate, bearing at the apex the abortive pistillidia. Capsule oblong, dividing into 2 or 3 valves attached at the apex, pedicel enlarged below the capsule, where a cross-section shows 60 cells round and 10 in diameter, the outer cells with thicker walls and rounded on the outer sides, inner cells larger. Elaters numerous, reddish-brown, filiform, bispiral; spores darker brown, smooth, roundish.

Measurements.—Fronds from 1½ to 2 inches long, 4· to 5· mm. wide; nerve ·5 mm. wide, ·2 mm. thick; bract 2· mm. high by 1·25 mm. broad at the base; calyptra 6· mm. long by 1·5 mm. broad; pistillidium ·5 mm. long by ·1 mm. broad; valves of capsule 2·5 mm. long by ·5 mm. broad; spore ·075 mm. diam.; elater ·5 mm. long × ·01 mm. broad.

Obs.—The crisped, interrupted, entire margin of the fronds will readily distinguish this species from *Symphyogyna rhizo, bola* (Nees), Schwaegr. In *S. Brasiliensis* (Nees) Mont. the frond is less undulate and not lobate, and the pistillidia are more numerous, longer, and contorted.

DESCRIPTION OF PLATE XXXIII.

Fig. 1. Frond nat. size. 2. Young fronds × 11. 3. Cross-section of portion of frond showing nerve × 24. 4. Bract × 24. 5. Calyptra × 11. 6. Pistillidium × 24. 7. Capsule opened × 11. 8. Spore × 85. 9. Elater × 85.

43 SYMPHYOGYNA OBOVATA, Tayl. Lond. Journ. of Bot. (1844), p. 581.

Mermaid's Glen, Blue Mts., Sept., 1885 (16 and 22.).

44 UMBRACULUM FLABELLATUM, (Hook.), G.

Wet rocks, Mermaid's Glen, Blue Mts., Sept., 1885 (13) (25).

45 RICCARDIA MINIMA, n.sp.

Dioicous; fronds minute, densely pulvinate, pale green, unaltered when dry, ramification bipinnate or polydactylous; stems convex on the lower surface, plane above, a single lateral row of cells projects from one or both borders, apex of the shoots gemmiparous, gemmæ very minute, dark green; small, clavate, claret-coloured, unicellular bodies irregularly scattered under the inferior surface; involucre postical, surrounded by fringed bracts; fructification wanting.

Tufts small, densely pulvinate. Fronds minute, intricately entangled at the base, pale green even when dry. Stems short, recurved, bipinnate or polydactylous, linear, slightly narrowed upward, convex on the under surface plane above, the young branches narrowed and more obtuse, near the apex somewhat terete, 12 to 18 cells wide by 6 cells deep on a cross-section, almost equal in size, marginal cells similar, the upper layer of cells oblong-quadrate in the middle of the frond, quadrate near the margin from which a single row of cells projects from one or both sides. Rootlets wanting. Scattered irregularly on the under surface are small, clavate, claret-coloured, unicellular bodies, of doubtful nature.

Gemmiparous at the apex; gemmæ extremely minute, dark-green. Inflorescence dioicous. Involucre postical, only immature involucra surrounded by two fringed bracts seen, teeth one and two cells long, obtuse.

Measurements.—Fronds 5· to 10· mm. long, ·4 to ·5 mm. diam., ·15 mm. thick; cells of upper layer ·04 × ·04 mm., ·05 × ·04 mm., ·04 × ·03 mm., ·07 × ·03 mm.

Hab.—On the surface of peat, in bogs, Coogee Bay, N.S.W., May, 1885.

Obs.—This is the smallest species of the genus known to us. It differs from *Riccardia palmata* (Hedw.) in its pale-green color, unaltered when dry, more bipinnate ramification, plano-convex section, marginal row of cells, and its gemmiparous terminal branches.

In *R. palmata* the section is bi convex and the margin blunt.

DESCRIPTION OF PLATE XXXIV.

Fig. 1. Plants nat. size. 2-3. Fronds × 16. 4. Upper layer of fronds × 290. 5-8. Cross-sections of frond × 85. 9. Club-shaped cells magnified.

46* RICCARDIA CRASSA (Schwaegr).

Northwood, Lane Cove River (28).

47 METZGERIA FURCATA, N.

Ball's Head Bay, Febry., 1885, (31); Cambewarra, Sept., 1885 (C. Harris), (63).

48 RICCIA MARGINATA, n. sp.

Fronds divergent, dichotomous; segments linear, obovate, canaliculate, thick and fleshy, olive-green, lower surface rounded, concolorous, margin fringed with semicircular scales, translucent, with a wavy purple line at their base, inflexed when dry. Structure columnar in the upper half, the prismatic rods truncate, chlorophyllose below. Capsules rare seated near the base of the fronds. Spores minute, with sub-cristate markings.

Growing in irregular scattered patches. Fronds large, dark reddish or olive-green, bifurcate, segments linear, deeply divided, obovate, oval or cuneate, convexo-inflexed when dry canaliculate; texture very firm, thick and cartilaginous, gradually narrowing towards the margin which is thin and pale, fringed with a row of hemispheric laminate scales having a purple waved line at the base. Surface of frond compact, laevigate but bearing minute scattered papillæ. Rootlets numerous, papillose within. A cross-section of the frond shows in the upper half the cells arranged in very regular columnar series; below this the structure is chlorophyllose—the investing membrane is composed of larger lozenge-shaped cells. Capsules deeply imbedded in the fronds. Spores slightly punctate, narrowly bordered.

Measurements.—Plants 10 to 15 mm. long; segments 4· to 5· mm. broad, 1· mm. thick; spores ·075 to ·011 mm. diam.

Hab.—Parramatta, N.S.W., August 1885.

Obs.—This appears to be a new and distinct species, and we fail to identify it with any of Taylor's species from New South Wales. In *Riccia acuminata*, Tayl., with which it agrees in form, the margin is entire. Its large size and remarkably firm fleshy cartilaginous (when dry) texture might lead one to refer it to *Corsinia*, or another genus which it resembles in size, but the presence of the immersed capsules at once determines it.

R. marginata belongs to the "Squamose-fimbriate" sub-section of Lindenberg, the best-known species of which are *R. nigrella*, de Cand., and *R. squamata*, Nees; both of these are covered with roundish purple scales which cover each side of the frond, whereas the scales of *R. marginata* are inserted on the same plane as the surface, are whitish, with purple base, and are only inflexed when dry.

R. lamellosa, Raddi, is cream-coloured and the scales oblong, white, and inserted a little below the margin, over which they bend.

R. fimbriata, Nees, (Mart. Fl. Brazil) appears like ours in the transverse insertion of the scales, but these are in two oval series, and the whole surface is studded with large, hyaline, conical papillæ, and the section of the frond cavernous.

DESCRIPTION OF PLATE XXXV.

Fig. 1. Plants nat. size. 2. Plant enlarged. 3-6. Cross-sections × 16. 7. spores × 85.

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49 RICCIA BULLOSA, *Link.* var. VESICULOSA.

Fronds obovate, bilobed, pale silvery green, lobes linear or cuneate, obtuse, emarginate, obsoletely canaliculate, section trigonous, upper half cavernous, honey-combed, epidermic layer thin, composed of much smaller cells, rugose, and in the old fronds pitted.

Plants forming whitish patches. Fronds 3-4 lines long by 1-2 broad, fleshy, bluntly trigonous on section, bifurcate, segments linear, transversely sulcate, narrowly canaliculate, margin rounded and waved, epidermic layer cavernous, looking under the microscope like the closed cells of a honey-comb.

On section the upper half of the frond is found to be composed of prismatic air-cells invested with delicate cellular walls.

Beneath this there is a compact green layer of smaller cells invested by the outer walls of the frond from which numerous rootlets are given off. Sides and undersurface greenish.

Measurements.—Plant 4 to 7 mm. long; lobes 1·75 mm. to 2·5 mm. broad, 1·25 mm. thick; sinus ·25 mm. deep.

Hab.—On earth, Parramatta, August, 1885.

Obs.—This beautiful species comes very near *R. bullosa*, Link. But the enlarged section in Lindenb. Monog. Ricciae, Tab. XXIII., f. 6, shews a constriction between the vesicular and chlorophyllose parts of the frond.

If further enquiry proves this Australian species to be distinct from *R. bullosa*, we propose the name *Riccia vesiculosa* for it.

DESCRIPTION OF PLATE XXXVI.

Fig 1. Fronds nat. size. 2. Frond × 16. 3. Portion of upper surface of frond magnified. 4-9. Cross-sections of frond × 16.

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50 Riccia asprella, n. sp.

Fronds gregarious, flabellate, punctate, pale frosted green, segments obovate or obcordate, emarginate or bilobed, thin and firmly attached to the ground ; plane but with margins slightly raised near the apex, rounded, fringed with minute scattered cilia. Capsule large. Spores minute, dark-brown, sub rugose.

Growing in irregular flabellate patches, sometimes overlapping, firmly attached to the ground, small, pale glaucous green, generally concolorous beneath, but the old portion brown or discoloured. Fronds thin, bifurcate, obovate, obcordate or cuneate, segments emarginate, plane, of almost equal thickness, margin somewhat raised near apex, rounded on the upper surface, ciliate, cilia irregularly distributed, two or three rows deep, short, subulate, when fresh the surface is beautifully pitted, the epidermic cells large and thick-walled, with a central umbo like the markings on a thimble, section of nearly equal thickness, inner layer chlorophyllose.

Rootlets short, frequent. Capsules numerous, spores dark brown, minutely verruculose, about 200 in a capsule.

Measurements.—Fronds 4· to 5· mm. long ; lobes 2·75 mm. broad, ·4 to ·6 mm. thick ; cilia ·3 mm. long, ·06 mm. broad at the base, ·25 mm. long, ·035 mm. broad at the base, ·2 mm. long, ·075 mm. broad at the base, ·175 mm. long, ·03 mm. broad at the base ; capsule ·7 mm. diam. ; spores ·01 mm. diam.

Hab.—On earth, head of Double Bay, Sydney, July, 1885.

Obs.—Riccia crinita, Tayl., the only other ciliated species recorded from Australasia, has the margin of a deep purple color, cilia much more numerous, very long and acicular.

This new species resembles in the pale frosted color some forms of *R. glauca,* mistaken by Hooker for *R. crystallina* L., but its closest alliance is with *R. glaucescens,* Carr., in which however, the margin is tumid, purple beneath, and with more scattered and larger cilia.

DESCRIPTION OF PLATE XXXVII.

Fig. 1 Fronds nat. size. 2. Frond × 16. 3. Portion of Cross-section × 24. 4-7. Cross-sections × 24. 8. Cells magnified. 9-11. Cilia × 85. 12. Capsule × 24. 13. Spores × 85.